

CLAIM AMENDMENTS

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1. (Currently amended) A laminated bearing composite shim having a laminate structure, the composite shim is non-extensible and has having a central axis, the composite shim having an outer circumference and comprising a first non-extensible composite layer including a matrix material and at least one circumferential fiber that surrounds a portion of said first non-extensible composite layer with said at least one circumferential fiber proximate said composite shim outer circumference, said circumferential fiber in said matrix material of said first non-extensible composite layer of said non-extensible composite shim with said circumferential fiber being oriented in a plane that is substantially perpendicular to said central axis.

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2. (Currently amended) A laminated bearing composite shim according to Claim 1, wherein the laminate structure further comprises a second composite layer including a plurality of axial fibers, and wherein the first composite layer has a first side and a second side opposite the first side and the second composite layer has a first side and a second side opposite the first side, and wherein the first side of the first composite layer is laminated to the first side of the second composite layer.

3. (Currently amended) A laminated bearing composite shim according to Claim 2, wherein the laminate structure further comprises a third composite layer including at least one circumferential fiber with said third composite layer circumferential fiber proximate said composite shim outer circumference, and wherein the third composite layer is laminated to the second side of the second composite layer.

4. (Currently amended) A laminated bearing composite shim according to Claim 2, wherein the laminate structure further comprises a third composite layer including a plurality of axial fibers and wherein the third composite layer is laminated to the second side of the first composite layer.

5. (Currently amended) A laminated bearing composite shim according to

Claim 4, wherein the second composite layer comprises a plurality of laminated composite sublayers, and wherein the third composite layer comprises a plurality of laminated composite sublayers.

6. (Currently amended) A laminated bearing composite shim according to Claim 5, wherein the composite sublayers of the second and third composite layers include uniaxial fibers.

7. (Currently amended) A laminated bearing composite shim according to Claim 6, wherein the uniaxial fibers of each of the composite sublayers of the second and third composite layers are oriented along an axis defining an axis of each of the composite sublayers, and wherein the composite sublayers are arranged such that the axes of adjacent composite sublayers are offset by an angle.

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8. (Currently amended) A laminated bearing composite shim according to Claim 7, wherein the second composite layer includes at least four composite sublayers, and wherein the third composite layer includes at least four composite sublayers.

9. (Currently amended) A laminated bearing composite shim according to Claim 8, wherein the four composite sublayers of the second composite layer are arranged such that their respective axes are in a 0°, +45°, -45°, and 90° orientation, and wherein the four composite sublayers of the third composite layer are arranged such that their axes are in a 90°, -45°, +45°, and 0° orientation.

10. (Currently amended) A laminated bearing composite shim according to Claim 4, wherein the second composite layer includes a layer selected from the group consisting of biaxial and triaxial woven cloth, and wherein the third composite layer comprises a layer selected from the group consisting of biaxial and triaxial woven cloth.

11. (Currently amended) A laminated bearing composite shim according to Claim 1, wherein the first composite layer matrix material further includes a polymeric

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material.

12. (Currently amended) A laminated bearing composite shim according to Claim 11, wherein the polymeric material comprises epoxy.

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13. (Currently amended) A laminated bearing composite shim according to Claim 1, wherein the at least one circumferential fiber is selected from the group consisting of carbon, graphite, glass, aramid and boron.

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14. (Currently amended) A laminated bearing composite shim according to Claim 1, wherein the composite shim has a thickness between about 0.01 inches to about 0.5 inches.

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15. (Currently amended) A laminated bearing composite shim having a laminate structure comprising a central axis and, the laminated bearing composite shim is non-extensible and has an outer circumference, said non-extensible laminated bearing composite shim comprising a first non-extensible composite layer including at least one circumferential fiber that surrounds a portion of said first non-extensible composite layer with said at least one circumferential fiber proximate said composite shim outer circumference the central axis and is located in a single plane.

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16. (Currently amended) A laminated bearing composite shim according to Claim 15, wherein the laminate structure further comprises a second composite layer laminated to the first composite layer, wherein the second composite layer includes a plurality of axial fibers.

17. (Currently amended) A laminated bearing composite shim according to Claim 16, wherein the second composite layer comprises a plurality of laminated composite sublayers.

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18. (Currently amended) A laminated bearing composite shim according to

Claim 15, wherein the first composite layer comprises a plurality of fibers that are concentrically oriented.

19. (Currently amended) A laminated bearing composite shim according to Claim 18, wherein the plurality of fibers that are concentrically oriented are arcuate shaped fibers.

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20. (Currently amended) A laminated bearing composite shim according to Claim 19, wherein the plurality of arcuate shaped fibers form a plurality of circles oriented as concentric rings.

21. (Currently amended) A laminated bearing structure comprising:
a plurality of resilient layers; and
a plurality of non-extensible shims alternating with and laminated to the plurality of resilient layers, wherein at least one of the non-extensible shims is a composite shim having an outer circumference a central axis and a laminate structure comprising a first composite layer including at least one circumferential fiber which surrounds a portion of said first composite layer with said at least one circumferential fiber proximate said composite shim outer circumference in a plane that is substantially perpendicular to said central axis.

22. (Currently amended) A laminated bearing structure according to Claim 21, wherein the composite shim having a laminate structure further comprises a second composite layer including a plurality of axial fibers, and wherein the first composite layer has a first side and a second side opposite the first side and the second composite layer has a first side and a second side opposite the first side, and wherein the first side of the first composite layer is laminated to the first side of the second composite layer.

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23. (Original) A laminated bearing according to Claim 22, wherein the composite shim having a laminate structure further comprises a third composite layer including a plurality of axial fibers and wherein the third composite layer is laminated to the second

side of the first composite layer.

24. (Original) A laminated bearing according to Claim 23, wherein the second composite layer comprises a plurality of laminated composite sublayers, and wherein the third composite layer comprises a plurality of laminated composite sublayers.

25. (Original) A laminated bearing according to Claim 24, wherein the composite sublayers of the second and third composite layers include uniaxial fibers.

26. (Original) A laminated bearing according to Claim 25, wherein the uniaxial fibers of each of the composite sublayers of the second and third composite layers are oriented along an axis defining an axis of each of the composite sublayers, and wherein the composite sublayers are arranged such that the axes of adjacent composite sublayers are offset by an angle.

27. (Original) A laminated bearing according to Claim 26, wherein the second composite layer includes at least four composite sublayers, and wherein the third composite layer includes at least four composite sublayers.

28. (Original) A laminated bearing according to Claim 27, wherein the four composite sublayers of the second composite layer are arranged such that their respective axes are in a 0°, +45°, -45°, and 90° orientation, and wherein the four composite sublayers of the third composite layer are arranged such that their axes are in a 90°, -45°, +45°, and 0° orientation.

29. (Original) A laminated bearing according to Claim 21, wherein the composite

shim has a thickness between about 0.01 inches to about 0.5 inches.

30. (Currently amended) A laminated bearing non-extensible composite shim for use with a laminated bearing resilient layer, said non-extensible composite shim

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having an outer circumference and a laminate structure comprising a central axis and a first composite layer including at least one fiber that circumferentially surrounds the central axis a portion of the first composite layer with said at least one fiber proximate said composite shim outer circumference circumferentially in a direction that is perpendicular to said central axis.

31. (Currently amended) A laminated bearing non-extensible composite shim according to Claim 30 wherein the at least one fiber is a hoop wound fiber selected from the group consisting of carbon, graphite, glass, aramid and boron circumferential.

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32. (Currently amended) A laminated bearing non-extensible composite shim according to Claim 30 wherein the first composite layer is at least one circumferential fiber is comprised of a plurality of concentric fiber circles.

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33. (Currently amended) A laminated bearing non-extensible composite shim according to Claim 30 wherein the at least one circumferential fiber is comprised of a spiral.

34. (Currently amended) A laminated bearing non-extensible composite shim according to Claim 30 wherein the laminate structure further comprises a second composite layer including a plurality of axial fibers, and wherein the first composite layer at least one circumferential fiber is comprised of a plurality of concentric fiber circles.

35. (Currently amended) A laminated bearing non-extensible composite shim according to Claim 33 wherein the laminate structure includes a plurality of alternating first and second composite layers.

36. (Currently amended) A laminated bearing non-extensible composite shim according to claim 34 wherein the laminate structure includes a plurality of composite layers with axial fibers are

~~oriented at angles, the orientation angles of axial fibers of consecutive layers being different.~~

37. (Currently amended) A laminated bearing non-extensible composite shim according to Claim 33 wherein the laminate structure further comprises a second composite layer including a plurality of radial fibers, ~~and wherein the at least one circumferential fiber is comprised of a plurality of concentric circles.~~

38. (Currently amended) A laminated bearing non-extensible composite shim according to Claim 36 wherein the ~~laminate structure includes a plurality of alternating first and second composite layers. axial fibers of said composite layers are oriented at different angles.~~

39. (Currently amended) A laminated bearing non-extensible composite shim according to Claim 30 further comprising at least one second composite layer comprising a plurality of radially extending fibers, and at least one third composite layer comprising a plurality of uniaxial fibers.

40. (Currently amended) A laminated bearing non-extensible composite shim according to Claim 38 wherein the shim includes a plurality of first, second and third composite layers.

41. (Currently amended) A laminated bearing non-extensible composite shim according to Claim 30 wherein the shim is frustoconical.

42. (Currently amended) A laminated bearing non-extensible composite shim according to Claim 30 wherein the shim is cylindrical.

43. (Currently amended) - A laminated bearing non-extensible composite shim according to Claim 42 wherein the composite shim has a plurality of fibers surrounding the central axis.

44. (Currently amended) A laminated bearing non-extensible composite shim according to Claim 43 wherein the central axis is a longitudinal axis, the composite shim further comprising at least one longitudinal fiber and the at least one longitudinal fiber being oriented in the direction defined by the longitudinal axis.

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45. (Currently amended) A laminated bearing non-extensible composite shim according to Claim 42 wherein the composite shim further comprises a plurality of circumferential fibers at least one fiber that extends circumferentially.

46. (Currently amended) A laminated bearing non-extensible composite shim according to Claim 44 wherein the composite shim further comprises ~~at least one longitudinal fiber and~~ ~~at least one outer periphery lateral fiber that extend around the outer periphery of the shim~~.